Introduction

The sheep and goat industry is threatened by several diseases, of which peste des petits ruminants (PPR) is one of the most important (18). The disease is caused by a morbillivirus of the family Paramyxoviridae (8). Since first being described in 1942, in the Cote d'Ivoire, PPR has been identified in many other countries of Africa, the Arabian peninsula and various parts of the Middle East (6, 18).

Sheep and goats are generally considered to be less susceptible to rinderpest than other animals under natural conditions; nevertheless, reports have described natural outbreaks in sheep and goats (4, 11, 17, 21).

Little is known about the epidemiology of PPR and rinderpest in sheep and goats in the Kingdom of Saudi Arabia (KSA). This paper describes features of these diseases in the Kingdom and provides suggestions for monitoring the disease.

Outbreaks in sheep, goats and wildlife

Clinically, PPR was suspected in sheep in 1980 (3) and also in gazelles and other deer (9). Virus isolation was unsuccessful on both occasions.

The first isolation of PPR virus (PPRV) in the KSA was made in 1990 (1), from clinical disease in goats, at Al-Ahsa oasis in the East of the country.

Several veterinarians, throughout the 1980s and 1990s, reported the clinical occurrence of PPR in sheep and goats in the KSA, but no virus isolation was attempted. The annual reports of the Ministry of Agriculture and Waters between 1991 and 1993 (13) noted that PPRV infection was suspected on four occasions, but again no virus isolation was made.
To date, no confirmed outbreaks of rinderpest have been reported in sheep and goats in the KSA.

Serological surveys

Most of the serological surveys for rinderpest virus antibodies in the KSA have focussed on cattle (14). However, one serological survey for rinderpest virus and PPRV neutralising antibodies involved sheep and goats in the East of the country (2). Results of the survey (Table I) indicated that 3.1% of the sheep and 0.6% of the goats were seropositive for PPRV antibodies, whilst 3.6% of the sheep and 5.7% of the goats had antibodies against rinderpest virus. The prevalence of PPRV antibodies in both species was 2.3%, while that of rinderpest virus antibodies was 4.3%.

Table I

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Paste des petits ruminants</th>
<th>Rinderpest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number tested</td>
<td>1,035</td>
<td>1,035</td>
</tr>
<tr>
<td>Total number positive</td>
<td>24 (2.3%)</td>
<td>44 (4.3%)</td>
</tr>
<tr>
<td>Number of sera giving monospecific reaction</td>
<td>16 (66.7%)</td>
<td>41 (93.2%)</td>
</tr>
<tr>
<td>Number of sera giving cross-neutralising antibodies</td>
<td>8 (33.3%)</td>
<td>3 (6.8%)</td>
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a) includes both monospecific and cross-reacting sera
b) monospecific sera only

Results of the same survey (2) also indicated that 66.7% of the PPRV positive sheep and goat sera were monospecific, while 93.2% of the rinderpest positive sheep and goat sera gave monospecific reactivity (Table I).

Results of the surveyed sheep and goats (2), which were in contact with cattle, indicated that 4.75% of the 807 tested sheep and goats were positive for rinderpest virus antibodies, while 2.75% were positive for PPRV antibodies.

Discussion

Several countries have made serious efforts to understand the peculiarities of PPR in their regions. Such studies have been conducted in Africa, India and the Middle East (10, 16, 20). This has involved the investigation of overt PPR outbreaks, and the instigation of serological surveys to study the prevalence of the disease.

Sheep meat is an important food in the KSA. It is the favourite meat for daily meals, festivals and religious occasions. During ‘Al-Hajj’ (a period of pilgrimage), hundreds of thousands of sheep are sacrificed (during the Arabic month of Dhu Al-Hijjah). This necessitates the importation of large quantities of sheep from various parts of the world. Goats are also imported, but to a lesser extent.

The movement of sheep and goats within the KSA follows two patterns. The first radiates from ports, distributing sheep to all regions of the country. The second includes movements of locally-bred sheep and goats from production centres to animal markets. In both circumstances, no movement constraints are applied.

Most of the locally-bred sheep and goats in the KSA are reared under semi-nomadic conditions. The animals are left to graze freely in the desert for part of the day, and at night are kept in pens. A lower percentage of animals is kept in intensive farms.

In animal markets, sheep and goats from various localities and of different breeds mingle with each other.

Despite the fact that sheep and goat movement in the KSA is unrestrained, the published data on suspected outbreaks of PPR in the country are very limited. Two outbreaks have been reported based solely on clinical observations (3, 9) and a further outbreak has been confirmed by successful virus isolation (1).

In regard to outbreaks of rinderpest, the disease has not been reported in sheep or goats in the KSA. However, the early unconfirmed outbreaks of PPR in 1980 and 1987 could, in fact, be rinderpest (3, 9).

Results of the serological survey for PPRV and rinderpest virus in sedentary sheep and goats confirmed infection with both viruses (2). Moreover, since sheep and goats in the KSA are vaccinated against neither disease, and since the tested animals were over one year old, the detected antibodies are expected to be due to natural exposure of these animals to the viruses.

The serological survey also indicated that seroconversion to rinderpest virus was higher in sheep and goats which were in close contact with cattle. Similar situations were observed in both natural and experimental conditions (5, 7, 8, 12, 19). In contrast, cattle have no role in the epidemiology of PPR in sheep and goats.

The introduction of PPRV into the KSA is not surprising. According to the Foreign Trade Statistics Report, issued by the Ministry of Finance (15), the KSA has a long history of importation of sheep and goats from many countries, most of which are known to experience PPRV infection in their populations of sheep and goats.

Although the international literature denotes the involvement of wild ruminants in the epidemiology of PPR (6), the situation in the KSA is unclear. Data based solely on clinical
observations only mentioned some suspected outbreaks of PPR or rinderpest in game animals (6).

To monitor the PPR and rinderpest situation in sheep and goats in the KSA, several factors should be considered. Firstly, frequent serological surveys should be undertaken throughout the country in sheep, goats and wild small ruminants. This could be achieved by collaboration between specialised local laboratories and the Saudi National Commission for Wildlife Conservation and Development. Secondly, the correct samples must be collected from any suspected clinical cases and sent to a laboratory for virological investigations. This must be accompanied by proper epidemiological investigations. Thirdly, in the case of outbreaks, the correct sanitary measures must be implemented immediately, together with strict observation of the animal health by-laws.

Acknowledgement
The authors would like to thank Mr A. Al-Khars for his excellent technical assistance.

Aspects épizootiologiques de la peste des petits ruminants et de la peste bovine chez les ovins et les caprins en Arabie Saoudite
A. Al-Naeem, E.M.E. Abu Elzein & A.I. Al-Afaleq

Résumé
Les auteurs examinent les aspects épizootiologiques de la peste des petits ruminants et de la peste bovine chez les ovins et les caprins en Arabie Saoudite. La présence de la peste des petits ruminants a été soupçonnée à plusieurs reprises, mais le virus n'a été isolé qu'une seule fois. Les informations concernant la peste des petits ruminants et la peste bovine chez les ovins et les caprins en Arabie Saoudite sont plutôt rares. La seule enquête effectuée sur ces maladies a montré qu'elles ne sont pas enzootiques dans la région.

Mots-clés

Aspectos epizootiológicos de la peste de pequeños rumiantes y la peste bovina en ovejas y cabras de Arabia Saudí
A. Al-Naeem, E.M.E. Abu Elzein & A.I. Al-Afaleq

Resumen
Los autores abordan una serie de aspectos ligados a la epizootiología de la peste de pequeños rumiantes y la peste bovina en ovejas y cabras de Arabia Saudí. Aunque en otras ocasiones se haya sospechado la presencia de la peste de pequeños rumiantes, sólo una vez ha podido aislar el virus. Los datos disponibles sobre la presencia de estas enfermedades en ovejas y cabras de Arabia Saudí son muy escasos, pero el único estudio realizado hasta ahora indica que ninguna de las dos es endémica en el país.

Palabras clave
References


